federal register

WEDNESDAY, FEBRUARY 11, 1976

PART II:

DEPARTMENT OF DEFENSE

Corps of Engineers, Department of the Army

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NAVIGATION POLICY: COST APPORTIONMENT OF BRIDGE ALTERATIONS

Proposed Policies and Procedure

DEPARTMENT OF DEFENSE

Corps of Engineers, Department of the Army

[33 CFR Part 277]

NAVIGATION POLICY: COST APPORTIONMENT OF BRIDGE ALTERATIONS

Proposed Policies and Procedures

The Chief of Engineers is proposing policies and procedures for determining the sharing of costs between the Federal Government and a non-Federal bridge owner when a bridge is to be altered or relocated for a proposed navigation improvement. The policies and procedures will be used in cost sharing recommendations made to Congress for navigation improvements proposed by the Chief of Engineers.

The Corps of Engineers has historically followed the cost sharing policies of the so-called "Truman-Hobbs Act" (33 U.S.C. 516), first enacted by Section 6, Public Law 647, 21 June 1940. The Act has been amended several times, and in 1966 the responsibility for its implementation was transferred from the Corps of Engineers to the U.S. Coast Guard. The Truman-Hobbs Act allows the Federal Government to order the alteration of a bridge which obstructs navigation, and provides guidelines for the sharing of the costs of such alterations between the Federal Government and the bridge owner.

The Chief of Engineers is not legally bound to the provisions of 33 U.S.C. 516 for bridge alterations required for navigation improvements recommended to Congress. However, the Chief of Engineers is proposing to adopt the principles of 33 U.S.C. 516 as a matter of policy, as an equitable sharing of costs between the bridge owner and the Federal Government. Under established procedures for recommending navigation improvements to Congress, the Chief of Engineers would obtain assurances from the bridge owner that the costs apportioned in accordance with the policies and procedures contained in this regulation will be provided to the Federal Government prior to the Corps initiating the bridge alteration. The regulation also permits the Corps to recommend improvements if such assurances cannot be obtained.

Prior to adopting policies and procedures for cost apportionment of bridge alterations, the Chief of Engineers invites comments from the public, particularly bridge owners which may be affected by a needed bridge alteration for a proposed navigation improvement. Comments may be submitted to the following address on or before 31 March 1976.

Chief of Engineers, Attn: DAEN-CWP-A, Department of the Army, Washington, D.C. 20314.

Dated: January 27, 1976.

KENNETH E. MCINTYRE,
Brigadier General, USA,
Acting Director of Civil Works.

PART 277—NAVIGATION POLICY: COST APPORTIONMENT OF BRIDGE ALTERATIONS

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AUTHORITY: 33 U.S.C. 1.

§ 277.1 Purpose.

This regulation provides policies and guidelines for the apportionment of bridge alteration costs required in connection with navigation improvements recommended in reports transmitted to the Chief of Engineers for approval or submitted to Congress for authorization.

§ 277.2 Applicability.

This regulation is applicable to all OCE elements and all field operating agencies having Civil Works responsibilities.

§ 277.3 References.

(a) Section 6, Public Law 647, 21 June 1940, as amended (33 USC 516).

(b) Section 7, Public Law 89-670, Department of Transportation Act, 15 October 1966 (49 USC 1656).

(c) Coast Guard reference: G-ECV-1, Truman-Hobbs Act, File No. 3272.

(d) ER 1105-2-50, Continuing Authorities Program (33 CFR 263).

§ 277.4 General.

Public Law 647, commonly referred to as the "Truman-Hobbs Act", provides for the alteration of railroad and highway bridges when found unreasonably obstructive to navigation. Section 6 of that Act establishes policies for the apportionment of such bridge alteration costs. Section 7, Public Law 89-670, transferred to the Secretary of Transportation from the Secretary of the Army the responsibility for administration of the Act. Pursuant to this responsibility, the Secretary of Transportation has established implementing procedures based on those previously adopted and utilized by the Chief of Engineers prior to 15 October 1966. This regulation adapts these cost apportionment procedures, found in reference § 277.3(c), to Corps of Engineers planning.

§ 277.5 Basic policies.

(a) The cost apportionment principles of 33 U.S.C. 516, are applicable to the costs of bridge alterations recommended by reporting officers in the interest of navigation during preauthorization planning, including studies conducted under the Continuing Authorities Program (ER 1105-2-50).

(b) The bridge owner shall bear such part of the cost as is attributable to the direct and special benefits which will accrue to the bridge owner as a result of the alteration, including the expectable savings in repair or maintenance costs. That part of the cost attributable to the requirements of railroad or highway traffic shall also be borne by the bridge owner, to include any expenditure for increased carrying capacity of the bridge, and such proportion of the actual capital cost of the old bridge as the used service life bears to the total estimated service life.

(c) In general, the Federal Government's participation in the cost of a bridge alteration shall be limited to providing a functional facility equal in every respect, as near as possible, to the existing facility, while also providing navigational clearances required to meet the anticipated and reasonable needs of navigation.

(d) If the bridge owner or other local interests desire improvements or modifications in the new bridge design for reasons other than eliminating an obstruction to navigation, the reporting officer may recommend such improvements if such local interests provide necessary assurances to pay the costs apportioned to them, based on Federal cost sharing policies for the purpose served.

(e) In the case of small boat harbors and channels, the costs of raising bridges strictly for recreational navigation shall be cost-shared 50 percent Federal and 50 percent non-Federal. Other bridge alteration costs associated with small boat harbors and channels, and not apportioned to the bridge owner by the procedures provided in this regulation, shall be also shared on the basis of 50 percent Federal and 50 percent non-Federal, the same as the costs of other general navigation facilities.

(f) Reporting officers shall obtain letters of intent from local interests for non-Federal costs apportioned under the provisions of this regulation, in accordance with established procedures for preauthorization feasibility studies. If such letters cannot be obtained, the reporting officer may recommend authorization of the project with the bridge alteration to be accomplished by the bridge owner upon the determination of the U.S. Coast Guard pursuant to its authority under 33 U.S.C. 516, prior to initiation of construction.

§ 277.6 Coordination with the U.S. Coast Guard.

In accordance with an agreement signed by the Chief of Engineers on 18 April 1973, (see EP 1165-2-2 for a copy of the agreement), reporting officers shall consult with the Coast Guard on contemplated and recommended navigation improvements which involve the consideration of bridge alterations. Determination of navigational requirements for horizontal and vertical clearances of bridges across navigable waters is a responsibility of the Coast Guard. The Chief of Engineers shall coordinate preauthorization feasibility reports, which include recommended bridge alterations, with the Commandant, U.S. Coast Guard.

§ 277.7 Procedures for apportionment of costs.

This paragraph provides the procedures for apportionment of costs of bridge alterations, as established by the U.S. Coast Guard (reference § 277.3(c)) and adapted for use in Corps planning and construction programs. A sample apportionment of the cost of a hypothetical bridge alteration is provided in Appendix B.

(a) *Calculate the Total Estimated Cost of Bridge Alteration.* The total estimated cost, to be apportioned by these procedures, includes the cost of all necessary appurtenances required to complete the alteration for use by both highway and railway traffic, including engineering, design and inspection.

(b) *Determine the Salvage Value of Bridge to be Altered.* The salvage value represents the worth of the materials in the old bridge which may be used for scrap or for other purposes. The value will vary depending on the intended use of the materials.

(c) *Determine Direct and Special Benefits.* (1) Removing old bridge. The bridge owner shall pay a share of the removal cost computed as that part of the removal cost that the used service life bears to the total estimated service life. The share of the bridge owner, thus computed, represents an obligation incurred by the owner now by reason of the needs of navigation which otherwise would not have to be met until the bridge had reached the end of its useful life. Accordingly, the present worth of the amount is computed deferred over the unexpired life. The interest rate to be used in the present worth computation is that established by the Water Resources Council, current at the time of the study.

(2) Fixed charges. A fixed charge such as engineering, design, and inspection costs, is an undistributed cost, shared in the ratio that each party shares in the cost of construction less fixed charges. In computing the bridge owner's share of the fixed charges, all other financial liabilities assigned to the bridge owner shall be included in the computation.

(3) Contribution. Costs associated with para 5d are included in the cost apportionment if the bridge owner desires the additional modifications. If a third party should be involved, such as a party which might benefit from some reasonable modification beyond the needs of navigation and the needs and desires of the bridge owner, that party would be responsible for the incremental costs of such further modification, and such costs would not enter into the apportionment between the bridge owner and the Federal Government.

(4) *Betterments.* Items desired by the bridge owner, but which have no counterpart in the old bridge or are of higher quality than similar items in the old bridge, will be included under this heading. Items considered to fall within this category are listed below. This list serves as a guide to indicate the types of items that may be considered betterments. The cost of such items will be borne by the bridge owner.

(i) Access roads.

(ii) Concrete or stone finish of embankment slopes instead of seeding.

(iii) Water proofing and skid-resistant epoxy finish of masonry surfaces.

(iv) Steel or concrete spans instead of timber trestle.

(v) Ballasted deck instead of open deck.

(vi) Trainman's walkways and sidewalks.

(vii) Elevators costing more than stairways.

(viii) Materials of greater thickness or heavier weight than supported by design requirements.

(ix) Exotic materials for machinery and operator's houses, including tinted and insulated windows.

(x) Heaters and insulation in the machinery house.

(xi) Operator's house furnishings, air-conditioners, water coolers, and medicine cabinets.

(xii) Hydraulic jacks for counterweight support.

(xiii) Fourth coat of paint, and exotic paint systems.

(xiv) Brass pipe and high alloy steel conduits.

(xv) Floodlights and metallic vapor arc lights.

(xvi) Spare parts.

(xvii) Lubricants and lubrication equipment, and tools in excess of minimum requirements.

(d) *Determine Expectable Savings in Repair or Maintenance Costs.* (1) The provisions of any features that would reduce annual maintenance costs of the altered bridge, such as a wider navigation span eliminating the requirement for protection works, reducing the overall length of the bridge by fill in lieu of a trestle, or replacing two bridges with one bridge, will be included under this heading. The bridge owner should bear the increased annual maintenance cost that will accrue as a result of providing any increased loading and width desired by the bridge owner or attributable to the requirements of railway or highway traffic. Since 33 U.S.C. 516 does not mention bridge operating costs, any increase or decrease in such costs shall not be included in the cost of alteration to be apportioned. The bridge owner's obligation is computed by capitalizing the estimated annual savings at the same rate of interest used in paragraph (c)(1) of this section.

(2) Expectable savings in repair costs is that amount which the bridge owner will not have to pay to restore his bridge, which may be in a damaged condition or may be dilapidated, since the bridge is being altered or removed as a part of the contemplated navigation improvement.

(e) *Estimate Costs Attributable to Requirements of Railway and Highway Traffic.* Items desired by the bridge owner to meet the requirements of railway and highway traffic, but which have no counterpart in the old bridge, will be included under this heading. Items considered to fall within this category are listed below. This list does not contain all such items, but it serves as a guide in determining which items might fall within this category.

(1) Increased navigational clearances for the benefit of land traffic.

(2) Wider roadbed.

(3) Additional traffic lanes or track.

(4) Medians and wider traffic lanes.

(5) Increased train clearances and spacing of tracks.

(6) Larger cross and bridge ties.

(7) New and heavier rail and expansion joint devices.

(8) Additional signaling and communications systems.

(9) Additional right-of-way.

(f) *Estimate Expenditure for Increased Carrying Capacity.* The bridge owner is required to pay the difference in cost between a bridge meeting the navigation clearance requirements with the same live loading capacity as the old bridge and new or altered bridge having any increased live loading capacity desired. The cost of increased live loading capacity will be based on the estimated cost of the new or altered bridge with unit prices applied to the quantity of materials estimate for a hypothetical bridge with the same live loading as the old bridge, but with the increased clearances required by the navigation improvement. The live loading of the new or altered bridge should be compared with the live loading of the old bridge, based on normal working stresses without overstress, overload, or reduction of safety factor.

(g) *Determine Value of Expired Service Life of Old Bridge.* (1) Section 6 of the Act provides, among other things, that the bridge owner shall bear such proportion of the actual capital cost of the old bridge or of such part of the old bridge as may be altered or rebuilt, as the used service life of the whole of a part bears to the total estimated service life of the whole or such part. Guide service life figures have been obtained from retirement curves based on mortality statistics, which represent an attempt to consider economic causes of retirement in addition to physical causes.

(2) For railroad bridges service life, figures of 100 years for substructure, 70 years for superstructure, 37 years for treated timber, 35 years for automatic signals, 20 years for main rail, 30 years for siding rail, and 20 years for crossties and bridge ties are considered to be reasonable and will be used in computing the bridge owner's liability. The service life of the operator's house and machinery house, including machinery, is considered to expire with the removal of the superstructure. For timber structures which have been in existence for more than 50 percent of their estimated service life, the expired service life is held usually at 50 percent providing the structure has been adequately maintained and is in a good state of repair.

(3) The service life of highway bridges, except for certain long span bridges, is usually limited by obsolescence as well as structural deficiency and deterioration. Obsolescence may be due to insufficient capacity for heavier loads and greater volume of traffic than the bridge was originally designed for, safety

requirements, and location. Superstructures and pile bents are considered to have a service life of 50 years. Masonry substructure which could be reused in the renovation of a bridge is considered to have a service life of 100 years.

(4) The foregoing service life figures are not to be used arbitrarily, but as a basis for a fair judgment of the service life considering all other factors that obtain in any particular case.

For the Chief of Engineers.

RUSSELL J. LAMP,
Colonel, Corps of Engineers, Executive.

APPENDIX A

SECTION 6, PUBLIC LAW 647, AS AMENDED (33 USC 516)

At the time the Secretary of Transportation shall authorize the bridge owner to proceed with the project, as provided in Section 515 of this title, and after an opportunity to the bridge owner to be heard thereon, the Secretary shall determine and issue an order specifying the proportionate shares of the total cost of the project to be borne by the United States and by the bridge owner. Such apportionment shall be made on the following basis: The bridge owner shall bear such part of the cost as is attributable to the direct and special benefits which will accrue to the bridge owner as a result of the alteration, including the expectable savings in repair or maintenance costs; and that part of the cost attributable to the requirements of traffic by railroad or highway, or both, including any expenditure for increased carrying capacity of the bridge, and including such proportion of the actual capital cost of the old bridge or of such part of the old bridge as may be altered or changed or rebuilt, as the used service life of the whole or a part, as the case may be, bears to the total estimated service life of the whole or such part. Provided, that in the event the alteration or relocation of any bridge may be desirable for the reason that the bridge unreasonably obstructs navigation, but also for some other reason, the Secretary may require equitable contribution from any interested person, firm, association, corporation, municipality, county, or State desiring such alteration or relocation for such other reason, as a condition precedent to the making of an order for such alteration or relocation. The United States shall bear the balance of the cost, including that part attributable to the necessities of navigation; and provided further, that where the bridge owner proceeds with the alteration on a successive partial bid basis the Secretary is authorized to issue an order of apportionment of cost for the entire alteration based on the accepted bid for the first part of the alteration and an estimate of cost for the remainder of the work. The Secretary is authorized to revise the order of apportionment of cost, to the extent he deems reasonable and proper to meet any changed conditions. (June 21, 1940, ch. 409, Section 6, 54 Stat. 499; July 16, 1952, ch. 889, Section 2, 66 Stat. 733; Aug. 14, 1958, Pub. L. 85-640, Section 1(c), 72 Stat. 595.)

APPENDIX B

HYPOTHETICAL EXAMPLE OF COST APPORTIONMENT

Following is the interpretation of the principles as applied to the alteration of a hypothetical highway-railroad bridge across Blank River between City A and City B.

REFERENCE TABLE A

1. Total estimated cost of alteration project $10,917,300

The existing double deck swing span will be replaced with a new double deck lift span affording a horizontal navigation opening of 250 feet clear width between piers normal to the navigation channel and a vertical clearance of 125 feet above mean high water in the raised position.

2. Salvage $77,300

This value is deducted from the original cost to determine the actual capital cost (See TABLE VII). It is also deducted from the Total Estimated Cost of Alteration Project to determine the cost to be apportioned.

REFERENCE TABLE I

3. Direct and special benefits:
   a. Removing old bridge (owner's share) $160,538

REFERENCE TABLE II

   b. Fixed charges (owner's share) $297,666
   c. Contribution (owner's share) ... $432,000

Testimony at the hearing developed that the bridge is unreasonably obstructive to navigation, but also, the bridge owner desires the alteration because the roadway width is considered inadequate to carry future highway traffic. Since the bridge will have to be replaced in any event, it is considered that as an equitable contribution the bridge owner should contribute an amount equal to one half of the expectable savings in the replacement cost. Other methods for determining the bridge owner's contribution are acceptable, depending on the circumstances.

REFERENCE TABLE III

   d. Betterments $18,360

REFERENCE TABLE IV

4. Expectable savings in repair or maintenance costs $16,288

The new bridge is designed for increased loading and width greater than that of the old bridge. Therefore, the estimated annual maintenance cost was based on a hypothetical bridge designed, but not constructed, for the same loading and width as the old bridge but with increased clearances as required to meet the needs of waterborne navigation, and not on the estimated annual maintenance cost of the new bridge.

REFERENCE TABLE V

5. Costs attributable to requirements of railway and highway traffic $1,634,000

The old bridge carries a highway deck on the upper level consisting of a roadway 18 feet wide (no sidewalks) and a railway deck on the lower level with 110-lb. rails. The new bridge will carry a highway deck on the upper level consisting on one 28 foot roadway and two 5-foot sidewalks, and the railway deck will have new 130-lb. rails. In addition, the railway deck will be paved to carry highway traffic. Thus, the bridge may be kept in an intermediate raised position when not being used by railway traffic to pass small-boat traffic without delaying highway traffic. The bridge owner also desires to provide additional highway approaches and right-of-way to connect a nearby secondary road with the new bridge.

REFERENCE TABLE VI

6. Expenditure for increased carrying capacity $2,330,000

The highway deck of the old bridge was designed for a live loading equivalent to AASHO H15-44 and the railway deck for live loading of Cooper E 45. The highway deck of the new bridge will be designed for live loading AASHO HS20-44, and the railway deck will be designed for live loading of Cooper E 60. Accordingly, the bridge owner will pay the additional cost for the increased carrying capacity of the new bridge.

REFERENCE TABLE VII

7. Expired service life of old bridge.. $511,300

The substructure of the old bridge was completed in 1908 and the superstructure completed in 1909. It is assumed that the bridge will be replaced in 1970.

TABLES

A. Summary of estimated project costs.
B. Tabulation of proportionate shares of cost to be borne by the United States and the bridge owner.
I. Bridge owner's share of removing old bridge.
II. Fixed charges to be paid by bridge owner.
III. Betterments.
IV. Expectable savings in repair or maintenance costs.
V. Costs attributable to requirements of railway and highway traffic.
VI. Expenditure for increased carrying capacity.
VII. Value of expired service life of old bridge.

TABLE A.—*Summary of estimated project costs*

Number and item	Cost	Fixed charges	Total
1. New bridge	$8,104,052	$570,000	$8,674,052
2. Removal of old bridge	521,908	500	522,408
3. Approaches	50,000	5,000	55,000
4. Additional highway approaches	1,530,000	15,000	1,545,000
5. Railroad force account work	41,800	3,500	45,300
6. Additional signaling	27,000	2,400	29,400
7. Right-of-way	13,240	900	14,140
8. Additional right-of-way	30,900	1,100	32,000
Total	10,318,900	598,400	10,917,300
Total estimated cost of project			10,917,300
Less salvage			77,300
Cost of alteration to be apportioned			10,840,000
Less right-of-way (items 7 and 8)			46,140
Cost of construction			10,793,860

TABLE B.—*Tabulation of Proportionate Shares of Costs to be Borne by the United States and the Bridge Owner*

Total estimated cost of project (excluding contingencies) (table A)	$10,917,300
Less salvage	77,300
Cost of alteration to be apportioned	10,840,000
Share to be borne by the bridge owner:	
Direct and special benefits:	
Removing old bridge	160,538
Fixed charges	297,666
Contribution	432,000
Betterments	18,360
Expectable savings in repair or maintenance costs	16,288
Costs attributable to requirements of railway and highway traffic	1,634,000
Expenditure for increased carrying capacity	2,330,000
Expired service life of old bridge	511,300
Total	5,400,152
Share to be borne by the United States	5,439,848
Contingencies 15 pct	815,977
Total	6,255,825
Share to be borne by the bridge owner	5,400,152
Contingencies 15 pct	810,023
Total	6,210,175

NOTE.—Bridge owner to bear $\frac{5,400,152}{10,840,000}$ = 49.8 pct. of the cost.

TABLE I.—*Bridge owner's share of removing old bridge*

Item to be removed	Age at time of removal (years) (1)	Owner's share (percent) (2)	Removal cost (3)	Owner's share of removal (4)	Years remaining (5)	Present worth factor (6)	Owner's present liability (7)
Substructure	62	62	$241,935	$150,000	38	0.1639	$24,585
Protection works	37	50	60,000	30,000	18	.4245	12,735
Superstructure	61	87	206,806	180,000	9	.6516	117,288
Signaling	61	100	440	440	0	1.0	440
Ties and timber	20	50	6,000	3,000	10	.6213	1,864
Rail and accessories:							
Rail, 110 lb	33	100	1,000	1,000	0	1.0	1,000
Do	13	65	5,637	3,664	7	.7166	2,626
Total			521,908	368,104			160,538

NOTE.—Present worth factor based on 4⅞ pct. fiscal year 1970, as established by Water Resources Council. The actual factor to be used shall be that current at the time of alteration.

TABLE II

FIXED CHARGES TO BE PAID BY BRIDGE OWNER

Cost of construction		$10,593,860
Less fixed charges		598,400
Total		10,195,460
Owner's share less fixed charges:		
Removing old bridge	160,538	
Contribution	432,000	
Betterments	18,360	
Expectable savings in repair or maintenance costs	16,288	
Costs attributable to requirements of railway and highway traffic (less right-of-way)		1,603,100
Expenditure for increased carrying capacity		2,330,000
Expired service life of old bridge		511,300
Total		5,071,586
Fixed charges by owner		297,666

$$\frac{5,071,586}{10,195,460} \times 598,400 = 297,666$$

TABLE III

BETTERMENTS

New furniture and water cooler in control house	$1,050
Increased cost of elevators over stairways	13,360
Increased cost of galvanized steel grating walkways over timber walkways	3,950
Total	18,360

TABLE IV

EXPECTABLE SAVINGS IN REPAIR OR MAINTENANCE COSTS

Actual average annual maintenance cost for period 1953 to 1968	$16,875
Estimated annual maintenance costs as computed for the replacement bridge	16,000
Total decrease in annual maintenance cost	875
Annual savings capitalized (50 years) at 4⅞ percent equal 875 divided by 0.05372	16,288

Present Worth Factor based on 4⅞ percent, F.Y. 1970, as established by Water Resources Council. The actual factor to be used shall be that current at the time of the study.

TABLE V

COSTS ATTRIBUTABLE TO REQUIREMENTS OF RAILWAY AND HIGHWAY TRAFFIC

Heavier running rail (130 lb in lieu of 110 lb)	$11,200
Paving, lower deck	34,900
Additional signaling	27,000
Additional highway approaches	1,530,000
Subtotal	1,603,100
Additional right-of-way	30,900
Total	1,634,000

TABLE VI

EXPENDITURE FOR INCREASED CARRYING CAPACITY

Cost of new bridge designed for Cooper E 60 and AASHO HS20–44 loading [1]	$8,609,592
Cost of replacement-in-kind (hypothetical) bridge designed for Cooper E 45 and AASHO H15–44 loading [1]	6,279,592
Total	2,330,000

[1] Excludes all items in Table III and first two items in Table V.

TABLE VII.—*Value of expired service life of old bridge—Replacement year, 1970*

Item to be removed	Year built	Original cost	Salvage value	Actual capital cost (2)—(3)	Estimated service life	Expired service life: Years 1970–(1)	Expired service life: Percent of total (6)÷(5)	Value of expired service life (4)×(7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Substructure:								
Pivot pier	1908	$34,500	0	$34,500	100	62	62	$21,390
Right end pier	1908	18,580	0	18,580	100	62	62	11,520
Left end pier	1908	21,410	0	21,410	100	62	62	13,274
Right abutment	1908	8,600	0	8,600	100	62	62	5,332
Left abutment	1908	11,410	0	11,410	100	62	62	7,074
Protection works:								
Pivot pier	1909	5,800	0	5,800	37	61	[1] 50	2,900
Right end pier	1942	3,200	0	3,200	37	28	[1] 50	1,600
Superstructure:								
Swing span	1909	168,920	$19,400	149,520	70	61	87	130,082
Electrification	1957	5,000	500	4,500	22	13	59	2,655
Left approach spans	1909	142,017	16,300	125,717	70	61	87	109,374
Right approach spans	1909	156,692	19,300	137,392	70	61	87	119,531
Signaling	1909	15,000	1,000	14,000	35	61	100	14,000
Ties and timber	1909	8,120	0	8,120	20	61	[1] 50	4,060
Rail and accessories:								
Rail, 110 Lb	1937	6,600	2,200	4,400	20	33	100	4,400
Do	1957	43,679	18,600	25,079	20	13	65	16,301
Roadway Approaches [2]:								
Pavement	1908	17,841	0	17,841	20	62	[1] 50	8,921
New Lane	1961	43,609	0	43,609	20	9	45	19,624
Subtotal			77,300	633,678				492,038
Engineering		24,695	0	24,695			[3] 78	19,262
Total			77,300					511,300

[1] Held at 50% if maintained in good condition.
[2] Roadway approaches to be abandoned.
[3] Weighted average $100 \times \frac{492,038}{633,678} = 78\%$.

EXPLANATION OF COLUMNS FOR TABLE VII

Column (1): Year Built is the original date that an item to be removed became a part of the bridge or the last known date that it was replaced. The items to be removed should be broken down to show as much detail as possible, particularly where there is a variation in the year built and/or the estimated service life.

Column (2): Original cost shall be supported by records furnished by bridge owner. Engineering cost should be estimated if unknown.

Column (3): Salvage—refer to para. 7b.

Column (4): Actual capital cost is the original cost of the item to be removed minus the salvage value.

Column (5): Estimated Service Life—refer to para. 7g.

Column (6) & (7): Expired Service Life—refer to para. 7g.

Column (8): Value of expired service life is the actual capital cost of the item to be removed multiplied by the percent of expired service life.

[FR Doc.76-3523 Filed 2-10-76;8:45 am]